

COMPLETE LISTING OF THE CLAIMS

1. (Currently amended)

A plastid transformation vector suitable for transforming a non-green plant cell, said plastid

Vector comprising, as operably linked components, a first flanking sequence, a DNA sequence coding for a foreign gene, and a second flanking sequence, where said flanking sequences are from the same species as said plant cell.

2. (Currently amended)

The vector of claim 1, further comprising a 5' regulatory sequence functional in proplastids and chloroplasts in light and in dark~~said plastid transformation vector.~~

3. (Currently amended)

The vector of claim 2, wherein said regulatory sequence comprises a promoter and said promoter is operative in proplastids and chloroplasts in light and in dark~~said plastid genome.~~

4. (Original)

The vector of claim 3, wherein said promoter is Prn 16S rRNA.

5 (Original)

The vector of claim 4, wherein said regulatory sequence comprises psbA5' and psbA3' elements.

6. (Original)

The vector of claim 2, wherein said regulatory sequences further comprise a 5' UTR capable of providing transcription and translation enhancement of said DNA sequence coding for a foreign gene.

7. (Original)

The vector of claim 2, wherein said regulatory sequences further comprise a 3' untranslated region (UTR) capable of conferring transcript stability to said DNA sequence coding for a foreign gene.

8. (Original)

The vector of claim 2, wherein said regulatory sequence further comprise a gene 10 5'UTR.

9 (Original)

The vector of claim 8, wherein said regulatory sequence further comprises a gene 10 5'UTR/rps 16'3UTR.

10. (canceled).

11. (Original)

The vector of claim 1, wherein said first flanking sequence is about 4 kb.

12. (Original)

The vector of claim 1, wherein said second flanking sequence is about 4 kb.

13. (cancelled)

14 . (canceled)

15. (Original)

The vector of claim 6, wherein said 5' UTR is a 5" UTR of psbA.

16 (Original)

The vector of claim 7, wherein said 3' UTR is a 3' UTR of psbA.

17. (Original)

The vector of claim 1 further comprising a DNA sequence encoding a selectable marker.

18. Original

The vector of claim 17, wherein said selectable marker is an antibiotic-free selectable marker.

19. (Original)

The vector of claim 18, where said antibiotic-free selectable marker is Betaine aldehyd dehydrogenase (BADH).

20. (Original)

The vector of claim 17, wherein said DNA sequence encoding said selectable encoding marker encodes an antibiotic resistance selectable marker.

21. (Original)

The vector of claim 20, wherein said antibiotic resistance selectable marker is aadA.

22 . (Original)

A plant stably transformed with the vector of claim 1.

23. (Currently amended)

The vector of claim 20, wherein said antibiotic resistance selectable marker is an aminoglycodase. A progeny of the plant of claim 22.

24. (canceled)

25. (Currently amended)

The vector of claim 23, wherein said antibiotic is kanamycin~~A non-green part of the plant of claim 22, comprising genome having a heterologous DNA sequence coding for polypeptide of interest.~~

26. (Currently amended)

A~~The plant of claim 22, where said plant further~~ that comprises at least one pro-plastid transformed with the vector of claim 1.

27. (Original)

A somatic embryo transformed with the vector of claim 1.

28. (cancelled).

29. (cancelled).

30. (Original):

A transgenic non-green plant cell having a plastid genome transformed with the plastid transformation vector of claim 1, wherein said transgenic non-green plant cell is regenerated through somatic embryogenesis.

31. (Original)

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A method of transforming a plastid through somatic embryogenesis comprising the steps of: integrating the vector of claim 1 into a plastid genome of a plant plastid.

32. (Currently amended)

A method of achieving plastid transformation using non-green ~~no-green~~ explants, wherein a plant is regenerated through somatic embryogenesis comprising the steps of:

a) creating a transplastomic plant cell by transforming a plant plastid in a plant cell with a vector of claim 1, said plant cell being capable of being regenerated through somatic embryogenesis, said selectable marker gene proteins providing resistance of the plant cell to a selection agent;

b) culturing the transplastomic plant cell in presence of the selection agent under conditions that allow the transplastomic cell to form a somatic embryo; and

c) growing the somatic embryo into a transplastomic plant.

33.(currently amended) A plant cell comprising a plastid including an expression cassette ~~comprising~~ comprising as operably joined components, a heterologous DNA sequence encoding a polypeptide of interest, a DNA sequence encoding a selectable marker, and ~~plastid~~ plastid DNA sequences flanking the expression cassette to facilitate stable integration of the said expression cassette into the chloroplast genome by homologous recombination, wherein said plant cell is regenerated through somatic ~~embryogenesis~~ embryogenesis.

34. (canceled)

35. (Currently amended)

A plastid transformation vector capable for transforming non-green plant cells, said plastid vector comprising, as operably linked components, a first flanking sequence, promoter operative in a plastid, a DNA sequence coding for a selectable marker operative in said plastid, a DNA sequence coding for a foreign gene, and a second flanking sequence, wherein said flanking sequences are from the same species as said plant cells.

36. (Currently amended)

A plastid transformation vector suitable for transforming a plastid, wherein said plastid to be transformed is in a non-green plant cell, and wherein said plastid transformation vector comprises, as operably linked components, a first flanking sequence, a regulatory sequence functional in said plastid, a heterologous DNA sequence coding for a polypeptide of interest, and a second flanking sequence, wherein said flanking sequences are from the same species as said plant cell.

37. (Original)

A method for producing a polypeptide of interest in a non-green plant cell, wherein said polypeptide of interest is coded for by a heterologous DNA sequence, comprising the steps of: integrating a plastid transformation vector according to claim 1 into the plastid genome of a plant cell; and growing said plant cell to express said polypeptide of interest.

38. (Current amended)

A method of visually selecting a transgenic plant comprising the steps of: transforming a non-green plant cell via the vector of claim 1 to express an exogenous betaine ~~betain~~-aldehyde dehydrogenase (badh) gene.

39. (Original)

A plastid transformation vector suitable for transforming a non-green plant cell, said plastid vector comprising, as operably linked components, a first flanking sequence, a regulatory sequence functional in a plastid, DNA sequence coding for a foreign gene, and a second flanking sequence.

40. (New):

A method of transforming a plant plastid and regenerating a transplastomic plant by somatic embryogenesis, said method comprising:

- a) creating a transplastomic plant cell by transforming a plant plastid in a plant cell with a vector of claim 1, said plant cell being capable of being regenerated through somatic embryogenesis, said selectable marker gene proteins providing resistance of the plant cell to a selection agent;
- b) culturing the transplastomic plant cell in presence of the selection agent under conditions that allow the transplastomic cell to form a somatic embryo; and
- c) growing the somatic embryo into a transplastomic plant.

41. (New)

A somatic embryo produced by the method of claim 40.

42. (New)

The method of claim 40 wherein the plant is selected from a cereal crop, a legume, and oil crop, a cash crop, a vegetable, a fruit, a nut, and a tree.

Respectfully submitted,

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